Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-52. (Cancelled)

53. (Previously Presented) A qubit system comprising:

a plurality of qubits; and

a control system coupled to each respective qubit in said plurality of qubits, wherein the control system includes:

a bus; and

a plurality of grounding switches, wherein each grounding switch in the plurality of grounding switches conditionally couples said bus to a respective qubit in said plurality of qubits.

54. (Previously Presented) The qubit system of claim 53, wherein the control system is configured to entangle the quantum state of two or more qubits in said plurality of qubits.

55. (Previously Presented) The qubit system of claim 54 wherein said plurality of qubits are arranged in an array and a qubit in said two or more qubits is not adjacent to any other qubit in said two or more qubits.

56. (Previously Presented) The qubit system of claim 54, wherein the quantum state of said two or more qubits become entangled when each respective grounding switch corresponding to said two or more qubits is set so that the two or more qubits are coupled to said bus.

57. (Previously Presented) The qubit system of claim 53, further comprising

means for reading out a quantum state of one or more qubits in the plurality of qubits.

58. (Previously Presented) The qubit system of claim 53, further comprising

means for setting the quantum state of one or more qubits in the plurality of qubits.

59. (Previously Presented) The qubit system of claim 53, further comprising

means for entangling the quantum state of one or more qubits in the plurality of qubits.

60. (Previously Presented) A quantum computing system, comprising:

a plurality of qubits configured in an array, the array having at least one row and at least one column, and wherein each row in the at least one row comprises a linear arrangement of two or more qubits and wherein each column in the at least one column comprises a linear arrangement of two or more qubits; and

a control system coupled to one or more qubits in the plurality of qubits, the control system configured to provide a quantum computing readout current or a quantum computing initialization current to one or more qubits in the plurality of qubits.

61. (Previously Presented) The quantum computing system of claim 60, further comprising:

a plurality of grounding switches, wherein

each respective grounding switch in the plurality of grounding switches corresponds to a qubit in the plurality of qubits, and wherein

each respective grounding switch is configured to conditionally connect the qubit corresponding to the respective grounding switch to a ground.

62. (Previously Presented) The quantum computing system of claim 61, further comprising:

a plurality of current switches, wherein

each respective current switch in the plurality of current switches corresponds to a qubit in the plurality of qubits, and wherein

each respective current switch is configured to conditionally connect the qubit corresponding to the respective grounding switch to a quantum computation readout current or a quantum computation initialization current.

63. (Previously Presented) The quantum computing system of claim 62, wherein the control system further comprises a control voltage to switchably couple, for each respective qubit in a row of qubits in the array, the current switch and the grounding switch that corresponds to respective qubit to the respective qubit.

64. (Previously Presented) The quantum computing system of claim 62, wherein qubits in the array are grounded by row in the array, the system further comprising a voltmeter coupled between a current switch and a ground of a qubit in the plurality of qubits.

65. (Previously Presented) The quantum computing system of claim 60, the control system further comprising means for initializing a column of qubits in the array by providing an initializing current to each qubit in the column.

66. (Previously Presented) The quantum computing system of claim 60, wherein the controller is further configured to readout a quantum state of each qubit in a column of qubits using:

means for applying a readout current to each qubit in the column of qubits, and

means for measuring a voltage across each qubit in the column qubits.

67. (Previously Presented) A method of entangling the quantum state qubits, comprising:

coupling a first qubit in a plurality of qubits to a second qubit in the plurality of qubits through at least one switch.

68. (Previously Presented) The method of claim 67, wherein the first qubit has a first quantum state corresponding to a first critical current of the first qubit and a second quantum state corresponding to a second critical current of the first qubit.

69. (Previously Presented) The method of claim 67, wherein the first qubit is a phase qubit.

70. (Previously Presented) The method of claim 67, wherein the coupling comprises:

closing a first switch coupled between the first qubit and a bus, thereby placing said bus and said first qubit in electrical communication with each other; and

closing a second switch coupled between the second qubit and a bus, thereby placing said bus and said second qubit in electrical communication with each other.